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Lithoscaptus pardalotus, a new species of coral-dwelling gall crab (Crustacea: Brachyura: Cryptochiridae) from Belau

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Abstract.—A new species of coral-dwelling gall crab, *Lithoscaptus pardalotus,* was found inhabiting the faviid coral *Favia* cf. *helianthoides* at Ngemelachel, Belau. The new species can be distinguished from others in the genus by the combination of having the internal orbital angle exceeding the external orbital angle and having very slender carapace that is nearly twice as long as wide.

Among collections of gall crabs (Cryptochiridae) I made in Belau [Palau] in 1984, were several specimens that could not be assigned to any described species. These specimens, collected from colonies of *Favia* cf. *helianthoides,* are described as a new species of the genus *Lithoscaptus* Milne Edwards, 1862.

Type material has been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), the Bernice P. Bishop Museum, Honolulu, Hawaii (BPBM), the Queensland Museum, Brisbane, Australia (QM), and the Muséum National D'Histoire Naturelle, Paris (MNHN).

Abbreviations used are: cl, carapace length; cw, carapace width; coll., collector; ft, feet; m, meters; mm, millimeters; MXP, maxilliped, ovig., ovigerous; P, pereopod; and PLP, pleopod. PHAP numbers refer to the author's collection numbers. Place names in Belau follow orthography proposed by Motteler (1986). The former place name is presented in brackets.

Lithoscaptus pardalotus, new species
Figs. 1, 2

Type material.—Holotype: Belau, Ngemelachel [Malakal] Is., off causeway by park S of Micronesian Mariculture Demonstration Center; 1 m; 18 Jul 1984; on *Favia* cf. *helianthoides* (Wells); PHAP 131; ♀, USNM 274140. Paratypes: Belau; all same locality and host as holotype, 1–3.5 m; PHAP 058; 4 Jul 1984; 1 ♀, BPBM S11274; PHAP 109; 14 Jul 1984; 2 ♀, 2 ♂, USNM 274142; PHAP 114; 14 Jul 1984; 2 ♀ (ovig.), MNHN B. 25100; PHAP 127; 18 Jul 1984; 3 ♀ (2 ovig), MNHN B. 25101; PHAP 128; 18 Jul 1984; 1 ♂, USNM 274141; PHAP 220; 27 Jul 1984; 2 ♀ (1 ovig), QM W20647.

Measurements.—Holotype: cl, 4.0 mm, cw, 2.2 mm. Paratypes: largest male: cl, 2.9 mm, cw, 1.6 mm; largest female: cl, 4.4 mm, cw, 2.5 mm; smallest ovigerous female: cl, 3.0 mm, cw, 1.8 mm.

Description.—(Female) Carapace convex in both directions, about 1.8 times longer than wide, widest just anterior to midlength, narrowing slightly anteriorly; in lateral view anterior portion sloping from midlength toward front; dorsal surface with W-shaped depression, with many scattered conical and round tubercles. Lateral margins of carapace subparallel; anterolateral margins lined with erect conical tubercles. Intraorbital margin concave, with scattered simple setae, irregularly denticulate; internal orbital angle extending beyond external, each orbital angle marked with prominent spine; orbit broadly V-shaped, margin granular. Posterior carapace convex, with scattered round tubercles decreasing in size posteriorly; cardiac region marked by inverted U-shaped furrow; posterolateral margins rounded, with rounded tubercles and granules. Carapace bearing scattered simple setae on entire surface. Pterygostomial region fused to carapace.

Basal segment of antennule extending slightly beyond eye, subtriangular in dorsal view (excluding apical spine), mostly smooth but with few granules and scattered setae dorsally, margins with 8–9 spines, distal apex marked with prominent spine; ventrally bearing scattered granules, no setae, subtriangular in shape; outer margins subequal, inner margin concave, edge rounded.

Eyestalks fully exposed dorsally, slightly swollen proximally, with scattered setae, mesial margin bearing prominent spine distally, 2 smaller spines subdistally; smooth ventrally; eyestalk length about 1.9 times cornea length.

Ischium of MXP-3 about 1.5 times longer than wide, surface mostly smooth, granular near distal margin, inner margin straight, distal half crenulate, lined with simple setae; outer margin denticulate, bearing few simple setae; exopod about half length of outer margin of ischium, with few pappose setae on outer margin. Merus granulate toward outer margin, latter finely denticulate, bearing few simple setae along entire length, distal angle produced, tuberculate. Palp segments bearing few simple setae along outer margins.

Cheliped (P-1) slightly shorter than first walking leg (P-2). Merus compressed, length about 2.2 times height; inner surface concave, smooth; outer surface convex, smooth; anterior margin smooth, with few simple setae; outer posterior margin with few granules, inner posterior margin serrated. Carpus length about 1.6 times height; outer surface smooth, but with granules near anterior margin; anterior margin with few low conical tubercles directed distally, with few scattered setae. Manus length about 1.4 times height, smooth, but with few granules proximally near anterior margin. Cutting edges of fingers entire, without setae; dactyl length about 0.6 times total chela length.

Merus of P-2 compressed, length about 2.6 times height; inner surface concave, and outer surface slightly convex, both surfaces smooth; anterior margin straight, curving slightly downward distally, with few granules along length and erect conical tubercles distally, with scattered simple setae along most of length; posterior margin straight, lined with angled tubercles giving serrated appearance, with proximally-pappose setae; posterodistal angle with 3 blunt tubercles. Carpus length about 2.0 times height; subtriangular in cross-section; anterior surface slightly rounded, sloping mesially, with erect conical tubercles, few simple setae; inner surface smooth, with simple setae at anterior margin; outer surface flat, mostly smooth, with granules on upper half, some tubercles at anterior margin, latter with simple setae. Propodus about 2.8 times longer than high, subtriangular in cross-section; outer surface flat, with scattered granules decreasing in size toward posterior margin; anterior surface flat, with erect conical tubercles and scattered setae; inner surface smooth, margin with 4 erect conical tubercles. Dactyl curved distally, with 2 tubercles proximally on upper surface, with few simple setae.

Second walking leg (P-3) smaller than P-2; merus length about 2.0 times height; outer surface slightly convex, smooth except for few tubercles on upper distal corner; inner surface concave, smooth; anterior margin straight, distal third curves sharply downward; margin bearing scattered simple setae, with tubercles on distal third; posterior margin relatively straight, lined with proximally-pappose setae, with 1 prominent and 2 smaller tubercles subdistally; posterodistal angle rounded, entire. Carpus subtriangular in cross-section, length about 1.9 times height; inner surface flat, smooth; outer surface mostly smooth, with row of tubercles at upper third; anterior margin with row of erect conical tubercles, with

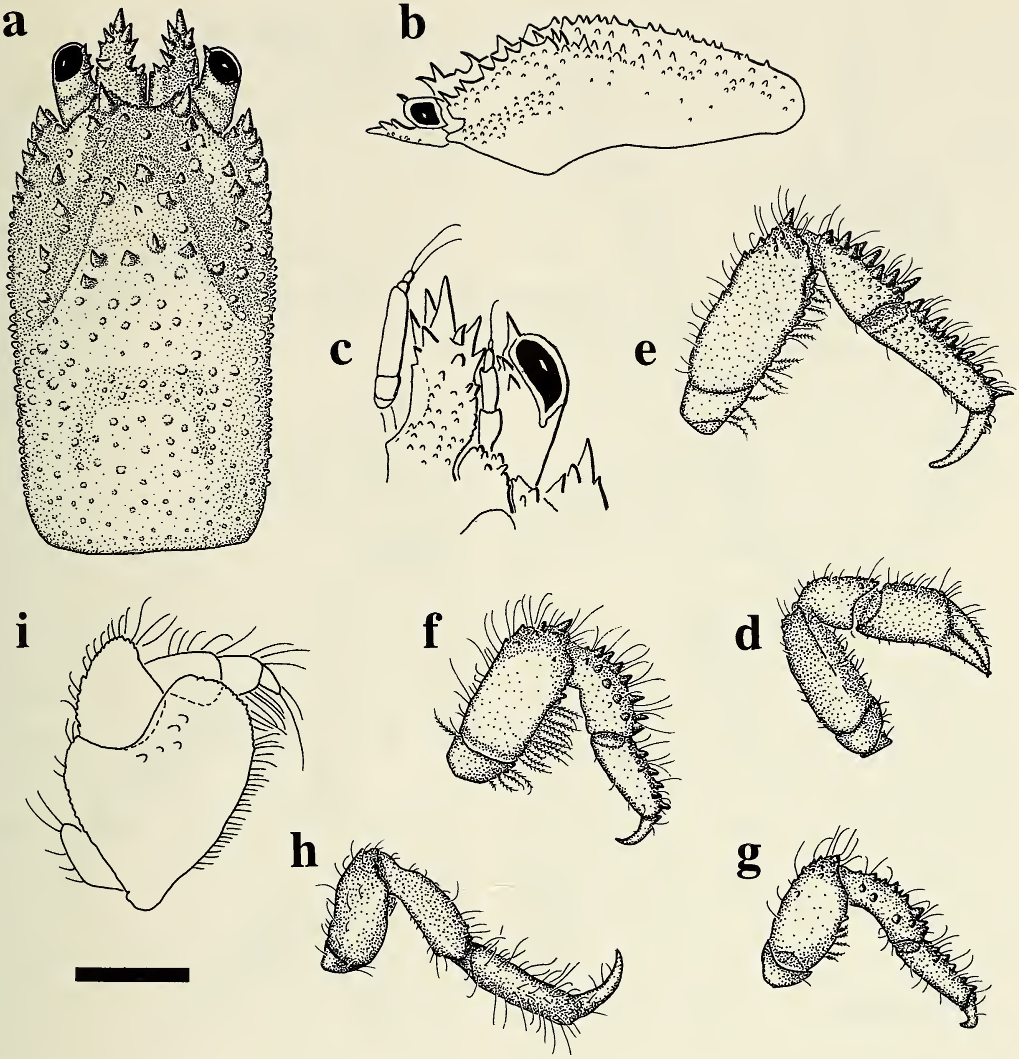

Fig. 1. *Lithoscaptus pardalotus,* new species, female holotype (carapace length 4.0 mm). a, Carapace (dorsal view); b, Carapace (lateral view); c, Left antennule, antenna, and eyestalk (ventral view); d–h, Right P1–P5; i, MXP-3. Scale: 1.0 mm (a–h); 0.46 mm (i).

few setae. Propodus slightly shorter than carpus, length about 2.3 times height; anterior margin with row of erect conical tubercles; outer surface mostly smooth, with few rounded tubercles toward anterior margin; inner surface smooth, with few setae. Dactyl curved distally, entire.

Third walking leg (P-4) slightly smaller than P-3; merus length about 1.7 times height; outer surface slightly convex, smooth, but with few rounded tubercles near anterodistal angle; inner surface convex, smooth, bearing few setae; posterior margin with 1 larger, 1 smaller tubercle subdistally; anterior margin slightly convex, with few simple setae, with angled tubercles giving serrated appearance on distal third. Carpus length 2.7 times height; outer surface convex, smooth, with few setae; posterior margin entire; anterior surface

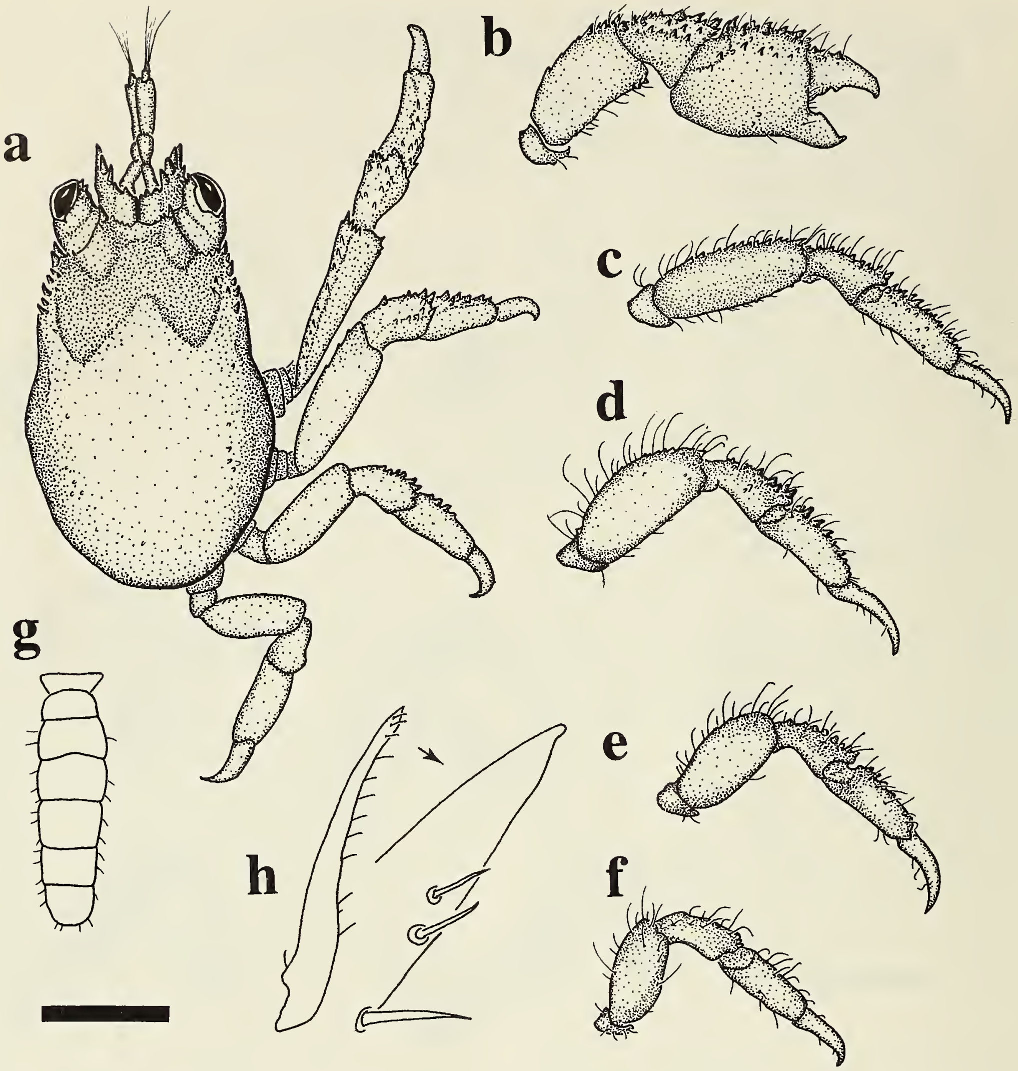

Fig. 2. *Lithoscaptus pardalotus,* new species, male paratype (carapace length 2.9 mm. a, Carapace and right P2–P5 (dorsal view); b–f, Right P1–P5 (lateral view); g, Abdomen; h, PLP-1 (with tip enlarged). Scale: 1.0 mm (a–g); 0.46 mm (h).

rounded, sloping toward outer surface, outer margin with 3 rounded tubercles, with few simple setae; inner surface slightly convex, smooth. Propodus rotated slightly mesially, length about 3.2 times height; outer surface slightly convex, smooth, with few simple setae; inner surface slightly convex, smooth, with few setae; posterior margin entire, with few setae; anterior margin straight, with 6 erect rounded tubercles, with scattered setae. Dactyl curved distally, rotated mesially, entire, with few scattered simple setae.

Fourth walking leg (P-5) more slender, longer than P-4; merus not compressed, length 1.9 times height; outer, inner surfaces convex, smooth, with scattered setae; posterior margin rounded, with tubercle near posterodistal angle; anterior margin rounded, convex, having few rounded tubercles distally, bearing few scattered simple setae. Carpus length 2.9 times height;

outer, inner surfaces slightly rounded, smooth, with scattered simple setae; posterior margin rounded, entire, having few simple setae; anterior margin rounded, with tubercles near distal margin, with few simple setae. Propodus rotated about 90° mesially, length 4.2 times height; outer, inner surfaces rounded, smooth, outer with scattered simple setae, inner having few rounded tubercles and few pappose setae. Dactyl curved distally, rotated slightly mesially, smooth, with many simple setae on inner surface, posterior margin.

Male smaller than female. Carapace pear-shaped in dorsal view, mostly smooth; anterolateral margin with many spines; anterior depression wider, smoother than that of female. Chelipeds more robust than in female; merus, carpus, and propodus with acute, angular tubercles along anterior margins. Dactyl with angular tubercles proximally; cutting surface of dactyl with tooth subproximally; fixed finger with low ridge running length of cutting surface. First pleopod as figured.

Coloration.—Carapace of female off-white, anterior part with many regularly-spaced black spots. Eyestalks mostly white with black wedge dorsally, red-orange stripe laterally; cornea dark red with white spot. Basal segment of antennule white with scattered black dots and larger black area proximally; palp clear, with white markings. Ventrum opaque, with scattered irregularly-shaped black spots; P-1 and P-2 bright white dorsally, last 3 segments of P-1 and dactyl of P-2 with rose hue. Male carapace clear, covered with reticulated black spots except on anterior depressions. Eyestalk as carapace, corneas dark red with silver spot. Ventrum opaque; MXP-3 with black spots. P-1 through P-5 off-white with scattered irregular black and blue-white spots.

Etymology.—From the Greek "*pardalotos*", spotted like a leopard, in reference to the black spots on the anterior part of the carapace.

Remarks.—Lithoscaptus pardalotus, new species, *L. tri* (Fize & Serène, 1956), and *L. nami* (Fize & Serène, 1957) can be distinguished from the other species presently included in the genus *Lithoscaptus* (Kropp 1990, 1994) by having the internal orbital angle extending beyond the external orbital angle. The slenderness of the new species, with a carapace length almost twice its width, distinguishes it from *L. tri* and *L. nami* in which the carapace length is about 1.3 times its width. The black-spotted pattern on the anterior carapace also differs from patterns found on other species.

Hosts.—Faviidae: *Lithoscaptus pardalotus* was collected on *Favia* cf. *helianthoides.* I can find no other references to gall crabs occurring on this species of coral.

Distribution.—Micronesia: Belau.

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